

WHAT IS CLAIMED IS:

1. A system for packet arrival time detection, comprising:

a receiver configured to receive a signal;

- 5 a packet arrival time detector, coupled to the receiver, configured to produce a packet arrival time output; and

a power estimator, coupled to the receiver, configured to estimate the power in the received signal and provide the estimated power to the packet arrival time detector to validate the packet arrival time output.

2. The system of claim 1, wherein the power estimator includes a squaring device configured to square the received signal to produce the estimated power of the received signal.

3. The system of claim 2, wherein the power estimator includes a bandpass filter configured to filter the received signal and to provide the filtered received signal to the squaring device.

4. The system of claim 2, wherein the power estimator includes a lowpass filter configured to filtered the output of the squaring device to produce a filtered power estimate of the received signal.

5. The system of claim 1, wherein the power estimator includes a Hilbert transform configured to produce an analytic signal comprising a real component and an imaginary component.

6. The system of claim 5, wherein the real component of the analytic signal is the received signal and the imaginary component of the analytic signal is the quadrature signal of the received signal.

7. The system of claim 5, wherein the power estimator includes a bandpass filter configured to filter the received signal and to provide the filtered received signal to the Hilbert transform.

8. The system of claim 7, wherein the bandpass filter is configured to have a frequency response with notches at frequencies where narrow band interference is present.

9. The system of claim 5, wherein the power estimator includes a first squaring device configured to square the real component of the analytic signal, a second squaring device configured to square the imaginary component of the analytic signal, and an adder configured to add the squared real component and the squared imaginary component to produce the estimated power.

10. The system of claim 8, wherein the power estimator includes a lowpass filter configured to filter the sum from the adder to produce a filtered estimated power.

11. The system of claim 1, wherein the packet arrival time detector is configured to detect an increase in the estimated power that indicates a packet is being received by the receiver.

12. The system of claim 11, wherein the increase in the estimated power is about ten decibels.

13. A method for packet arrival time detection, comprising the steps of:
receiving a signal;
processing the received signal to produce a packet arrival time output;
processing the received signal to produce an estimated power; and
validating the packet arrival time output using the estimated power.

14. The method of claim 13, wherein the step of processing the received signal to produce an estimated power includes squaring the received signal.

15. The method of claim 13, wherein the step of processing the received signal to produce an estimated power includes bandpass filtering the received signal and squaring the bandpass-filtered received signal.

16. The method of claim 15, wherein the step of processing the received signal to produce an estimated power further includes lowpass filtering the squared bandpass-filtered received signal to produce the estimated power.

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17. The method of claim 13, wherein the step of processing the received signal to produce an estimated power includes Hilbert transforming the received signal to produce an analytic signal with a real component and an imaginary component.

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18. The method of claim 17, wherein the real component of the analytic signal is the received signal and the imaginary component of the analytic signal is a quadrature signal of the received signal.

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19. The method of claim 18, wherein the quadrature signal of the received signal is a Hilbert transform of the received signal.

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20. The method of claim 17, wherein the step of processing the received signal to produce an estimated power includes bandpass filtering the received signal and providing the filtered received signal to the Hilbert transform.

21. The method of claim 20, wherein the bandpass filtering of the received signal removes narrow band interference.

22. The method of claim 17, wherein the step of processing the received signal to produce an estimated power includes squaring the real component of the analytic signal, squaring the imaginary component of the analytic signal, and adding the squared real component of the analytic signal and the squared imaginary component of the analytic signal.

23. The method of claim 22, wherein the step of processing the received signal to produce an estimated power further includes lowpass filtering the sum of the squared real and imaginary components of the analytic signal to produce the estimated power.

24. The method of claim 13, wherein the step of validating the packet arrival time output includes detecting an increase in the estimated power that indicates that a packet is being received.

25. The method of claim 24, wherein the increase in the estimated power is about ten decibels.

26. The method of claim 24, wherein the increase in the estimated power defines a window during which the packet arrival time output is considered valid.

27. A system for packet arrival detection, comprising:

means for receiving a signal;

means for processing the received signal to produce a packet arrival time output;

5 means for processing the received signal to produce an estimated power;
and

means for validating the packet arrival time output using the estimated power.

10 28. A system for packet arrival time detection, comprising:

a receiver configured to receive a signal;

a packet arrival time detector, coupled to the receiver, configured to produce a packet arrival time output;

15 a power estimator, coupled to the receiver, configured to determine an estimated power of the received signal and to provide the estimated power to the packet arrival time detector to validate the packet arrival time output, where the power estimator generates an analytic signal including a real component equal to the received signal and an imaginary component equal to a Hilbert transform of
20 the received signal, and the power estimator squares the real and imaginary components of the analytic signal and adds together the squared real and imaginary components of the analytic signal to produce the estimated power.

29. The system of claim 28, wherein the power estimator bandpass filters the received signal to remove narrow band interference prior to generating the analytic signal.

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30. The system of claim 29, wherein the power estimator lowpass filters the estimated power prior to providing the estimated power to the packet arrival time detector.

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